

Claims

- [c1] A management apparatus for managing a network including a plurality of interconnecting devices forming one or more communication path having one or more of said interconnecting devices connected in series, each of said interconnecting devices interconnects communication between two transmission media and has a disconnect function for disconnecting communication to at least one of said transmission media in a case where communication from the other one of said transmission media has been disconnected, and one or more of said plurality of interconnecting devices having a disconnection release function for releasing a disconnection operation by said disconnect function, said management apparatus comprising:
- an interconnecting-device information memory operable to store interconnecting device information for identifying which of said interconnecting devices have said disconnection release function;
 - a processing unit operable to determine, in a case where said communication path has been disconnected, which of said one or more interconnecting devices has said disconnection release function based on said interconnecting device information;
 - a diagnosis unit operable to sequentially control said one or more interconnecting devices in said communication path having said disconnection release function to acquire corresponding communication statuses of said interconnecting devices in said communication path, and to diagnose a probable location of trouble in said disconnected communication path; and
 - a notifying unit operable to notify, based upon said probable location of trouble diagnosed by said diagnosis unit, which of said one or more interconnecting devices and said transmission media is said probable location of trouble.
- [c2] A management apparatus as claimed in claim 1, wherein said diagnosis unit transmits, to each of said interconnecting devices in said communication path having said disconnection release function, a communication status get message for getting a communication status of said each of said interconnecting devices, and determines the probable location of trouble by a reply message responding to said communication status get message from said

each of said interconnecting devices.

[c3] A management apparatus as claimed in claim 2, wherein said interconnecting devices include a first interconnecting device and a second interconnecting device, each having said disconnection release function and being connected in said communication path,
said diagnosis unit transmits said communication status get message to said first interconnecting device to acquire said communication status of said first interconnecting device, and
in a case where it is diagnosed that there is no trouble in communication between said management apparatus and said first interconnecting device, said diagnosis unit releases an operation by said disconnect function of said first interconnecting device; transmits, via said first interconnecting device, said communication status get message to said second interconnecting device; and diagnoses the probable location of trouble between said first interconnecting device and said second interconnecting device by using said reply message responding to said communication status get message.

[c4] A management apparatus as claimed in claim 1, further comprising a trouble recording unit operable to store trouble information identifying occurrences of trouble in said network, wherein
said diagnosis unit determines, by said trouble information for a similar communication path having a configuration similar to said disconnected communication path, a degree of the probable location of trouble for each of said interconnecting devices in said disconnected communication path for which trouble in communication has yet not been determined.

[c5] A management apparatus as claimed in claim 4, wherein said diagnosis unit determines the degree of the probable location of trouble for each of said interconnecting devices in said disconnected communication path by said trouble information of a corresponding interconnecting device at a corresponding position in said similar communication path.

[c6] A management apparatus as claimed in claim 4, wherein said notifying unit is operable to display on a display of said management apparatus, for each of said

plurality of interconnecting devices in said network, whether a probability of trouble is high or low or whether or not there is trouble so as to be visually recognized.

- [c7] A management apparatus as claimed in claim 1, further comprising a trouble recording unit operable to store trouble information identifying occurrences of trouble in said network, wherein
said diagnosis unit determines, by said trouble information for a similar communication path having a configuration similar to said disconnected communication path, a degree of the probable location of trouble for each of said transmission media for which trouble in communication has yet not been determined.
- [c8] A management apparatus as claimed in claim 7, wherein said diagnosis unit determines the degree of the probable location of trouble for said each of said transmission media by said trouble information of a corresponding transmission medium at a corresponding portion of said similar communication path.
- [c9] A management apparatus as claimed in claim 7, wherein said notifying unit is operable to display on a display of said management apparatus, for each of said transmission media in said network, whether a probability of trouble is high or low or whether or not there is trouble so as to be visually recognized.
- [c10] A network management method for managing a network having a plurality of interconnecting devices forming one or more communication path by one or more of said interconnecting devices connected in series, each interconnecting device interconnects communication between two transmission media and has a disconnect function for disconnecting communication to at least one of said transmission media in a case where communication from the other one of said transmission media has been disconnected, one or more of said plurality of interconnecting devices having a disconnection release function for releasing operation of said disconnect function, the method comprising:
storing interconnecting device information for identifying which of said interconnecting devices has said disconnection release function;
determining, when said communication path has been disconnected, which of

said one or more interconnecting devices in said disconnected communication path has said disconnection release function by said interconnecting device information;
sequentially controlling each of said interconnecting devices in said communication path having said disconnection release function to acquire communication statuses of said interconnecting devices in said communication path, and diagnosing a probable location of trouble in said interconnecting devices or said transmission media in said communication path; and notifying that said interconnecting devices or said transmission media have trouble based upon the probable location of trouble diagnosed for said interconnecting devices or said transmission media.

[c11]

A program for managing a network including a plurality of interconnecting devices forming one or more communication path with one or more of said interconnecting devices connected in series, each interconnecting device interconnects communication between two transmission media and has a disconnect function for disconnecting communication to at least one of said transmission media when communication from the other one of said transmission media has been disconnected, at least one of said plurality of interconnecting devices has a disconnection release function for releasing operation of said disconnect function, said program comprising:
a memory module operable for storing of interconnecting device information for identifying which of said interconnecting devices has said disconnection release function;
a processing module operable for determining, when said communication path has been disconnected, which of said one or more interconnecting devices has said disconnection release function;
a diagnosis module operable for sequentially controlling each of said interconnecting devices in said communication path having said disconnection release function to acquire communication statuses of said interconnecting devices, and for diagnosing a probable location of trouble in said interconnecting devices or said transmission media; and
a notifying module operable for notifying that said interconnecting devices or

said transmission media have trouble based upon the probable location of trouble diagnosed for said interconnecting devices or said transmission media by said diagnosis module.

- [c12] A computer-readable medium storing a program for managing a network including a plurality of interconnecting devices forming one or more communication path with one or more of said interconnecting devices connected in series, each interconnecting device interconnects communication between two transmission media and has a disconnect function for disconnecting communication to at least one of said transmission media when communication from the other one of said transmission media has been disconnected, at least one of said plurality of interconnecting devices has a disconnection release function for releasing operation of said disconnect function, said program comprising:
- a memory module operable for storing of interconnecting device information for identifying which of said interconnecting devices has said disconnection release function;
 - a processing module operable for determining, when said communication path has been disconnected, which of said one or more interconnecting devices has said disconnection release function;
 - a diagnosis module operable for sequentially controlling each of said interconnecting devices in said communication path having said disconnection release function to acquire communication statuses of said interconnecting devices, and for diagnosing a probable location of trouble in said interconnecting devices or said transmission media; and
 - a notifying module operable for notifying that said interconnecting devices or said transmission media have trouble based upon the probable location of trouble diagnosed for said interconnecting devices or said transmission media by said diagnosis module.